

REMARKS

Favorable reconsideration of this application as presently amended is respectfully requested.

After entry of the foregoing amendment, Claims 89-111 remain pending in the present application, Claims 63-88 being canceled and Claims 89-111 being newly added by way of the Preliminary Amendment. Support for new claims 89-111 can be found at least on page 15 line 11 to page 28 line 5. No new matter has been added by the amendment.

By way of summary, the outstanding Official Action presents the following issues:

A new supplemental oath or Declaration is requested under 37 C.F.R. § 1.67; the title of the invention is objected to; the Abstract of the Disclosure is objected to; Claims 84 and 87 stand rejected under 35 U.S.C. § 112, second paragraph; Claims 79-88 are rejected under 35 U.S.C. § 103 as obvious over Kasai et al (IEDM 94-497, pp. 19.4.1-19.4.4) hereinafter Kasai or Agnello et al, (U.S. Patent No. 5,796,166 hereinafter Agnello) taken with Park et al, (U.S. Patent No. 6,051,492, hereinafter Park) and Fleming et al, (U.S. Patent No. 5,916,634, hereinafter Fleming); and Claims 63-78 and 85-88 stand rejected under 35 U.S.C. § 103 as obvious over Agnello or Kasai taken with Park and Fleming and further in view of Sasaki et al, Japanese patent No. 9-260306, hereinafter Sasaki and Chiang et al, (U.S. Patent No. 5,817,572, hereinafter Chiang).

SUPPLEMENTAL DECLARATION

Applicants submit herewith a supplemental declaration which embraces the subject matter corresponding to the various limitations of the new method Claims 89-111.

Accordingly, Applicants respectfully request that the outstanding objections relating to the Declaration be withdrawn.

OBJECTION TO THE TITLE

In regard to the objection to the title, Applicants have submitted a new title which is indicative of the invention to which the claims are directed.

Accordingly, Applicants respectfully request that the objection to the title be withdrawn.

REJECTION UNDER 35 U.S.C. § 103

Turning now to the merits, as claims 63-88 have been canceled, the rejections under 35 U.S.C. § 112 are now moot. Moreover, new Claims 89-111 have been added to clarify the patentable distinctions of the present invention over the cited references. Specifically, independent Claims 89 and 107 each recite, *inter alia*,

“ . . . a method of forming a barrier metal formed of nitride containing refractory metal . . . with a chemical vapor deposition (CVD) wiring structure of a semiconductor device including:

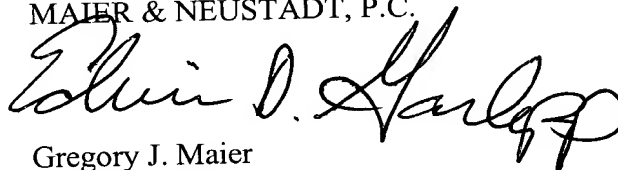
 . . . heating the substrate and vacuumizing an inside of the processing apparatus into which the substrate is carried;
 forming a film containing refractory metal on the first metal layer and one of the second metal layer and the insulating layer on the substrate by supplying reduction gas and gas containing the refractory metal into the processing apparatus; and
 nitriding the film containing the refractory metal by supplying gas containing nitrogen into the processing apparatus after forming the film containing the refractory metal, thereby forming nitride.”

In contrast, Agnello discloses a multilayer semiconductor structure having an oxygen or dopant diffusion barrier fabricated of an electrically conductive material. However, this reference does not disclose the limitations recited above. Moreover, it is noted that the reference to Kasai discloses using sputtering to form a barrier layer, rather than the CVD recited in Claims 89 and 107. Finally, the cited references to Park, Fleming, Sasaki and Chiang et al. are not believed to correct these deficiencies.

Thus, new Claims 89-111 are presented for examination on the merits and these claims are believed to patentably define over the cited reference. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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Serial No: 09/530,588
Amendment Filed on:
Herewith 11/4/02

IN THE SPECIFICATION

Page 1, please replace line 1 to read as follows:

--TITLE OF THE INVENTION--

Page 1, line 2, please delete the title in its entirety and substitute therefor:

--METHOD OF FORMING SEMICONDUCTOR WIRING STRUCTURES--

IN THE CLAIMS

Claims 63-88 (Canceled).

Claims 89-111 (New).

IN THE ABSTRACT

(New).